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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,342	04/01/2004	Yuu Inatomi	43888-309	5354
7590 05/29/2008 MCDERMOTT, WILL & EMERY 600 13th Street, N.W. WASHINGTON, DC 20005-3096				
EXAMINER				
DOVE, TRACY MAE				
ART UNIT		PAPER NUMBER		
1795				
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05/29/2008		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/814,342

Applicant(s)

INATOMI ET AL.

Examiner

TRACY DOVE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 14 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4, 6-8 and 10-12 is/are pending in the application.  
4a) Of the above claim(s) 1, 2, 4, 6 and 7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8 and 10-12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date \_\_\_\_\_

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This Office Action is in response to the communication filed on 3/14/08. Claims 1, 2, 4, 6-8 and 10-12 are pending. Claims 1, 2, 4, 6 and 7 are withdrawn as being directed toward a nonelected species.

#### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/14/08 has been entered.

#### ***Election/Restrictions***

Claims 1, 2, 4, 6 and 7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 11/20/07.

Applicant elected formula 8 (page 10 of the specification) as the organic compound species and a carbonaceous material as the substrate species.

#### ***Claim Objections***

Claim 12 is objected to because of the following informalities: the dependent claim is in improper form. Claim 8 recites "an electrode" and claim 12 recites "the electrochemical device in accordance with claim 8", which is improper. The claims should be amended to clearly recite

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what is being claimed (an electrode or an electrochemical device). Note “for an electrochemical device” in claim 8 is an intended use limitation. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 8 and 10-12 are rejected under 35 U.S.C. 102(e)/103(a) as being anticipated by, and alternatively unpatentable over, Nakahara et al., US 6,866,964.

Nakahara teaches a secondary battery (electrochemical device) comprising at least a positive electrode, a negative electrode and an electrolyte, wherein an active material in at least one of the positive electrode and the negative electrode contains a radical compound (2:20-25). Examples of the radical compound include formulas (A1) and (A2) in column 3, lines 5-18. The radical compound may be represented by formula (A5) wherein all of the alkyls R<sub>1</sub> to R<sub>4</sub> are methyl (4:35-67). In formula (A5), X<sub>1</sub> and X<sub>2</sub> may both be an aliphatic group that is saturated or

unsaturated, substituted or unsubstituted, and straight, cyclic or branched. The radical compound may be represented by formula (A8) wherein all of the alkyls  $R_1$  to  $R_4$  are methyl and X is an aliphatic group (5:50-6:16). The negative electrode collector (substrate) may be carbon and the active material of the negative electrode may be chemically bound to the negative collector. The positive electrode collector (substrate) may be carbon and the active material of the positive electrode may be chemically bound to the positive collector (25:53-58). See also formula (A30) at column 30. Thus the claims are anticipated.

The claims are alternatively unpatentable. Nakahara does not explicitly teach the elected species of Formula 8 in the present specification. However, Nakahara teaches the radical compound may be represented by formula (A8) wherein X is an aliphatic group. The aliphatic group contained in the elected species is one of multiple aliphatic groups. A 35 U.S.C. 102/103 rejection is considered proper where it is unclear if the reference teaches the claimed elected invention with sufficient specificity. The elected radical compound of formula 8 is at least obvious in view of the teachings by Nakahara because no criticality has been shown for the specific aliphatic group of the claimed elected invention.

\*

Claims 8 and 10-12 are rejected under 35 U.S.C. 102(b)/103(a) as being anticipated by, and alternatively unpatentable over, Nakahara et al., WO 02/082570 and/or under U.S.C. 102(c)/103(a) as being anticipated by, and alternatively unpatentable over, Nakahara et al., US 7,226,697.

Note US 7,226,697 will be used to discuss the teaching of both Nakahara references since WO 02/082570 was published in Japanese.

Nakahara teaches a charge storage device such as a battery wherein a positive electrode comprises a nitroxyl compound having a structure of a nitroxyl cation moiety represented by formula (I) in an oxidized state while having a structure of a nitroxyl radical moiety represented by formula (II) in a reduced state. The reaction is represented by formula (A) (abstract). Preferably, the nitroxyl compound is a compound containing a cyclic structure represented by general formula (1a) in an oxidized state. In formula (1a), R1 to R4 may each represent an alkyl having 1 to 4 carbon atoms and X represent a bivalent group forming a five-to seven-membered ring. Formula (1a) may be part of a polymer where X is part of a side chain in the polymer or of a main chain of the polymer. The nitroxyl compound is particularly preferably a polymer having a side chain comprising the structure represented by formula (1a) (2:10-30). A preferred nitroxyl compound is represented by formula (1) in column 3. The negative electrode collector (substrate) may be carbon and the active material of the negative electrode may be chemically bound to the negative collector. The positive electrode collector (substrate) may be carbon and the active material of the positive electrode may be chemically bound to the positive collector (8:49-56). Thus the claims are anticipated.

The claims are alternatively unpatentable. Nakahara does not explicitly teach the elected species of Formula 8 in the present specification. However, Nakahara teaches the nitroxyl compound may be represented by formula (1) wherein formula (1) is part of a polymer. A 35 U.S.C. 102/103 rejection is considered proper where it is unclear if the reference teaches the claimed elected invention with sufficient specificity. The elected radical compound of formula 8 is at least obvious in view of the teachings by Nakahara because no criticality has been shown for the specific polymer group (repeat unit structure) of the claimed elected invention.

***Response to Arguments***

Applicant's arguments filed 3/14/08 have been considered but are not found persuasive. Applicant asserts both Nakahara '697 and '964 are silent to an active material bonded to the substrate via a covalent bond. However, Nakahara teaches the negative electrode collector (substrate) may be carbon and the active material of the negative electrode may be chemically bound to the negative collector. Both the substrate of the elected invention and the substrate (collector) of Nakahara are carbon. In formula (A8), "X" is a carbon containing chain. Thus, in order for the active material to be chemically bound to the collector, a carbon-carbon bond is inherently taught by Nakahara. Both the nitroxyl radical of the elected invention and the nitroxyl radical of Nakahara function as the electrode reaction site.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tracy Dove/

Primary Examiner, Art Unit 1795

May 26, 2008